

- * said crystal grains substantially uniformly aligned in $a - b$ crystallographic planes; and
- * said additional phase elements and said further phase elements caging and framing said nano-size superconductor ceramic grains and forming nano-size cells comprising said grains surrounding by said additional and further phase elements and providing settings of said grains.

ABSTRACT OF THE DISCLOSURE

A sintered ceramic composite lead with a superconductive nano-architecture and said nano-architecture consists of two linked components comprising: (A) a physical-chemical phase composition consisting of nano-size superconductor ceramic grains composed of crystals and forming a basic phase elements; additional phase elements constituting nano-thick multi-oxide silicate glass films distributed within grain boundary areas between said grains; further phase elements selected from at least one group consisting of nano-size dope particle, modifier particle, and impurities particle groups, and a combination thereof and said further phase elements are distributed within said grain boundary areas between said grains; **and** (B) a three dimensional grain-cell nanostructure comprising setting network and consisting of: said crystals with c - axes oriented substantially perpendicular to a direction of an electric current flux in said lead; said crystal grains substantially uniformly aligned in $a - b$ crystallographic planes; and said additional phase elements and said further phase elements caging and framing said nano-size superconductor ceramic grains and forming nano-size cells comprising said grains surrounding by said additional and further phase elements and providing settings of said grains.